REMARKS

In response to the Office Action dated March 21, 2008, Applicants respectfully request reconsideration based on the above claim amendments and the following remarks. Applicants respectfully submit that the claims as presented are in condition for allowance.

Claims 1-28 are pending in the present Application. Claims 15-22 are withdrawn as being directed to non-elected subject matter based on the response filed December 17, 2007 in response to Restriction Requirement of November 19, 2007, Claims 1, 4, 10, 15, 23 and 24 are amended, and Claim 29 is added leaving Claims 1-14 and 23-29 for consideration upon entry of the present amendments and following remarks.

Support for the claim amendments can at least be found in the specification, the figures, and the claims as originally filed. Particularly, support for amended Claims 1, 10 and 23 is at least found in originally filed Figures 3 and 4. Support for new Claim 29 is at least found in the specification at page 9, lines 2-7 and page 15, lines 23-27.

The drawings and specification are also amended to correct inadvertent spelling and typographical errors, and to detail in the specification, all reference numerals shown in the drawings.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Specification

In the Office action, the specification is objected to as failing to provide proper antecedent basis for claimed subject matter. Particularly, "the first aspect ratio of 1:3 and the second aspect ratio" of Claims 4 and 24 are alleged as not having antecedent basis in the specification. Applicants respectfully disagree.

At page 3, lines 16-21 of the originally filed specification, and with reference to Figure 2,

"The TFT fingerprint identification substrate 10 usually has a higher resolution than the TFT-LCD panel 20 for the purpose of accurate fingerprint identification operation. For example, n unit cells of TFTs having an aspect ratio of 1:1 corresponds to one pixel of the TFT-LCD panel having an aspect ration of 1:n. Namely, n unit cells of TFTs having the aspect ratio of 1:1 are arranged over one pixel of the TFT-LCD panel having the aspect ratio of 1:n."

In Claims 4 and 24, "three unit cells are arranged over the [one] pixel." That is, there are three (e.g., "n") unit cells, and the (first) aspect ratio of the pixel, as clearly described in the specification above, has a first aspect ratio of 1:n, or 1:3. As further described in the specification above, each of the unit cells of the TFTs have a (second) aspect ratio of 1:1. Therefore, three unit cells are arranged over the pixel having a first aspect ratio of 1:3, each of the unit cells having a second aspect ratio of 1:1 of Claims 4 and 24, has antecedent basis in the specification, for all the reasons detailed above.

Reconsideration and withdrawal of the relevant specification objection are respectfully requested.

Claim Rejections Under 35 U.S.C. §103

Claims 1-14 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim, et al., International Publication WO 01/45283 A1 (hereinafter "Kim") in view of Kikkawa et al., U.S. Patent No. 6,879,359. Applicants respectfully traverse the rejections.

Firstly, amended Claims 1, 10 and 23 recite, *inter alia*:

"*a first substrate including a first transparent electrode*, a sensor thin film transistor for receiving a light reflected from a fingerprint to generate electric charges corresponding to an intensity of the reflected light, a storage device for storing the electric charges, a first switch thin film transistor for receiving the electric charges from the storage device to output the electric charges in response to an external control signal;

the first transparent electrode being disposed on a lower surface of the first substrate;

a liquid crystal layer interposed between the first and second substrates, wherein the liquid crystal layer contacts the first substrate."

In the Office action, LCD display 3 and transparent substrate 11 of fingerprint reader 10 in Figure 5 of Kim is considered as disclosing the "liquid crystal layer" and the "first substrate" of the claimed invention. It is conceded at Page 3 of the Office action that Kim does not teach the "first transparent electrode" of the claimed invention. Therefore, Kim *does not teach or suggest* a first substrate including a first transparent electrode, **the first transparent electrode being disposed on a lower surface of the first substrate**, and a liquid crystal layer interposed between the first and second substrates, wherein the liquid crystal layer contacts the first substrate of amended Claims 1, 10 and 23.

Secondly, in the instant Office action at Page 3, it is stated that Figure 4 of Kim is considered as *inherently* disclosing the LCD panel 3 including a second substrate and a liquid crystal layer attaching to the first substrate (i.e., the transparent substrate 11 of fingerprint reader 10 of Kim) of independent Claims 1, 10 and 23. Applicants respectfully submit that the theory of inherency is normally reserved for rejections under 35 U.S.C. § 102. *In re Grasseli*, 318 U.S..P.Q. 303 (Fed. Cir. 1983), and that the instant claim rejection relying on "inherency" is improper and should be withdrawn.

At Page 3 of the instant Office action goes on to state that while Kim does not explicitly disclose the LCD panel having a first transparent electrode, a second substrate having a second transparent electrode, a color filter and a second switch TFT, Kikkawa is instead relied upon as teaching these elements of the claimed invention.

Notwithstanding that the theory of inherency is normally reserved for rejections under 35 U.S.C. § 102, and such a rejection should be withdrawn, for purpose of this response only, as best understood, it appears from the above discussion that the rejection details are defining a liquid crystal layer of the LCD panel 3 in Kim would inherently be *directly attached* to the fingerprint reader 10/11 of Kim. Applicants respectfully submit that there is *no teaching or suggestion* in Kim, and *no suggestion or knowledge generally available to one of ordinary skill in art* that would lead that individual to directly attach a liquid crystal layer of an LCD to the fingerprint reader 10/11 of Kim. To the contrary, as evidenced by knowledge generally available to one of ordinary skill in the art, such as the same Kikkawa cited in the instant Office action, an LCD itself includes a liquid crystal layer disposed between *two substrates*. That is, the LCD 3 of Kim would include two substrates with the liquid crystal layer disposed therebetween, and at best, one of these two substrates would then be attached to the fingerprint reader 10/11 as Figure 4 of Kim illustrates.

More particularly, referring to the structure in Figure 3 of Kikkawa cited in the rejection details, Kikkawa specifically teaches a liquid crystal layer 33 is held between a TFT substrate 60 including a first transparent substrate 21 and an opposite substrate 61 including a second transparent substrate 35. (See, Col. 3, line 66 – Col. 4, line 36 and Col. 8, lines 11-20, and Figures 1 and 3.) As evidenced by knowledge generally available to one of ordinary skill in the art, such as Kikkawa cited in the instant Office action, that individual would merely be led to attach the first transparent substrate 21 or the second transparent substrate 35 of Kikkawa to the

fingerprint reader 10/11 of Kim, contrary to the contention of the rejection details. Therefore, Kim and Kikkawa, alone or in combination, *do not teach or suggest* **a first substrate including a first transparent electrode**, a sensor thin film transistor for receiving a light reflected from a fingerprint to generate electric charges corresponding to an intensity of the reflected light, a storage device for storing the electric charges, a first switch thin film transistor for receiving the electric charges from the storage device to output the electric charges in response to an external control signal, **the first transparent electrode being disposed on a lower surface of the first substrate**, and a liquid crystal layer interposed between the first and second substrates, wherein the liquid crystal layer contacts the first substrate of amended Claims 1, 10 and 23.

Furthermore, as evidenced by the above discussion regarding combining the teachings of Kim and Kikkawa, since the LCD 3 of Kim would include two substrates, and the fingerprint reader 10/11 would include one additional substrate, there would be a total of three substrates in the resulting structure. Problems associated with this three substrate structure are described in the specification at page 2, line 18 to page 4, line 7 with reference to Figure 2. However, since the claimed invention integrates the sensor for sensing the fingerprint into the first substrate of the device, the total number of substrates is advantageously reduced to two, thereby simplifying the device. Since the combination of teachings of Kim and Kikkawa would lead one of ordinary skill in the art to include three substrates, contrary to the present invention as described, claimed and illustrated, there exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine* Kim and Kikkawa to teach a liquid crystal layer interposed between the first and second substrates, wherein **the liquid crystal layer contacts the first substrate** of amended Claims 1, 10 and 23.

Moreover, since the liquid crystal of Kim would be disposed in the LCD 3, and Kim teaches the LCD 3 is merely overlapped with the fingerprint reader 10 (See, page 4, lines 14-18 and Figure 4 of Kim), air is essentially interposed between the LCD 3 and the fingerprint reader 10. In contrast, the liquid crystal layer of the present invention directly contacts the first substrate and is interposed between the first substrate including the sensor and the second substrate including the color filter layer, there further exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine* Kim and Kikkawa to teach a liquid crystal layer interposed between the first and second substrates, wherein **the liquid crystal layer contacts the first substrate** of amended Claims 1, 10 and 23.

Thirdly, regarding Claims 1, 10 and 23, the rejection details on Page 3 of the instant Office action merely allege without further explanation as to how or where Kim and Kikkawa teach the (first portions of the) data line/data wiring, the first electrode of the second switch TFT, the (first portions of the) gate line, the second electrode of the second switch TFT, the color filter disposed on the gate line and the data line/data wiring, and the insulating layer disposed covering the data wiring, of Claims 1, 10 and 23, respectively.

Applicants respectfully submit that the broad rejection and explanation on Page 3 of the instant Office action with respect to at least Claims 1, 10 and 23 merely alleges but does not show that all of the claimed subject matter is taught or suggested in the references themselves, or that knowledge generally available to one of ordinary skill in art would lead that individual to combine the relevant teachings of the references to disclose the claimed invention. As such, Applicants respectfully submit that since clear and complete details regarding all of the claim limitations of the claimed subject matter is not provided in the instant Office action, the Office action is incomplete. Applicants respectfully request further explanation regarding Claims 1, 10 and 23, and the (first portions of the) data line/data wiring, the first electrode of the second switch TFT, the (first portions of the) gate line, the second electrode of the second switch TFT, the color filter disposed on the gate line and the data line/data wiring, and the insulating layer disposed covering the data wiring, of Claims 1, 10 and 23, respectively.

Fourthly, Applicants respectfully submit that Kim and Kikkawa, alone or in combination, *do not teach or suggest*, and are in fact *silent as to teaching* a second substrate including a pixel having **a data line electrically coupled with a first electrode of the second switch thin film transistor, a gate line electrically coupled with a second electrode of the second switch thin film transistor**, a color filter layer formed on **first portions of the gate line, the data line** and the second switch thin film transistor, a second transparent electrode formed on the color filter layer and electrically coupled with a second portion of ***the first electrode*** of Claims 1 and 10, and a pixel including a **data wiring having a data line** formed in the second substrate, a color filter layer on the second substrate **on which the data wiring is formed**, the color filter layer covering **a first portion of the data wiring**, an insulation layer **covering the data wiring** and the color filer layer, and a second transparent electrode electrically coupled with a second portion of **a**

first electrode of the second switch thin film transistor of Claim 23. Therefore, *prime facie* obviousness does not exist regarding at least Claims 1, 10 and 23 with respect to Kim and Kikkawa.

Since Kim and Kikkawa, *do not teach or suggest* and are in fact *silent about* all of the limitations of at least Claims 1, 10 and 23, there exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine* Kim and Kikkawa to teach the claimed invention. Therefore, *prime facie* obviousness further does not exist regarding at least Claims 1, 10 and 23 with respect to Kim and Kikkawa.

Finally, regarding Claim 2 (depending upon Claim 1) and Claim 11 (depending upon Claim 10), overcoat layer 32 of Kim is cited as teaching the "first insulating layer." Kim merely teaches that the overcoat layer 32 is formed to cover black matrix 29 and color filter 30 in common, the overcoat layer 32 preventing impurities from the color filter 30 from being mixed into liquid crystal layer 33 and control the thickness of the liquid crystal layer 33. (See, Col. 4, lines 20 and 21, and Col. 5, lines 31-34, and Col. 10, lines 17-10.

Applicants respectfully submit that Kim is silent as to the overcoat layer 32 being electrically coupled to any other feature in Kim, let alone being electrically coupled to a "portion of the first electrode of the second switch thin film transistor." In fact, for all the reasons discussed above, Kim and Kikkawa, alone or in combination, *do not teach or suggest*, and are in fact *silent as to teaching* "a first electrode of the second switch thin film transistor." Necessarily then, Kim and Kikkawa, alone or in combination, *do not teach or suggest*, and are in fact *silent as to teaching* the second substrate further comprises a first insulation layer disposed between the color filter layer and the second transparent electrode to cover the color filter layer, **the first insulation layer electrically coupled with the second portion of the first electrode** of Claims 2 and 11.

Since Kim and Kikkawa, *do not teach or suggest* and are in fact *silent about* all of the limitations of at least Claims 2 and 11, there exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine* Kim and Kikkawa to teach the claimed invention. Therefore, *prime facie* obviousness further does not exist regarding at least Claims 2 and 11 with respect to Kim and Kikkawa.

Thus, since Kim and Kikkawa, alone or in combination, *fail to teach or suggest all of the limitations of* at least amended Claims 1, 10 and 23, and of Claims 2 and 11, since there exists *no suggestion or motivation in the references or to one of ordinary skill in the art to modify or combine* Kim and Kikkawa to teach the claimed invention, since Kim specifically teaches *contrary to the claimed invention*, and since combining the teachings of Kim and Kikkawa *does not teach the claimed invention*, and in fact teaches *contrary to the claimed invention*, *prime facie* obviousness does not exist regarding Claims 1, 2, 10, 11 and 23 with respect to Kim and Kikkawa. Applicants respectfully submit that Claims 1, 2, 10, 11 and 23 are not further rejected or objected and are therefore allowable. As Claims 3-9, 12-14 and 24-28 variously depend from Claims 1, 10 and 23, they are correspondingly allowable. Entry of the claim amendments, reconsideration, withdrawal of the relevant §103 rejections, and allowance of Claims 1-14 and 23-28 are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is cordially requested to telephone the undersigned.

Applicants hereby petition for any necessary extension of time required under 37 C.F.R. 1.136(a) or 1.136(b) which may be required for entry and consideration of the present Reply.

In the event the Commissioner of Patents and Trademarks deems additional fees to be due in connection with this application, Applicants' attorney hereby authorizes that such fee be charged to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: /Amy Bizon-Copp/
Amy Bizon-Copp
Registration No. 53,993
CANTOR COLBURN LLP
20 Church Street
22nd Floor
Hartford, CT 06103
Telephone (860) 286-2929
Facsimile (860) 286-0115
Customer No. 23413

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